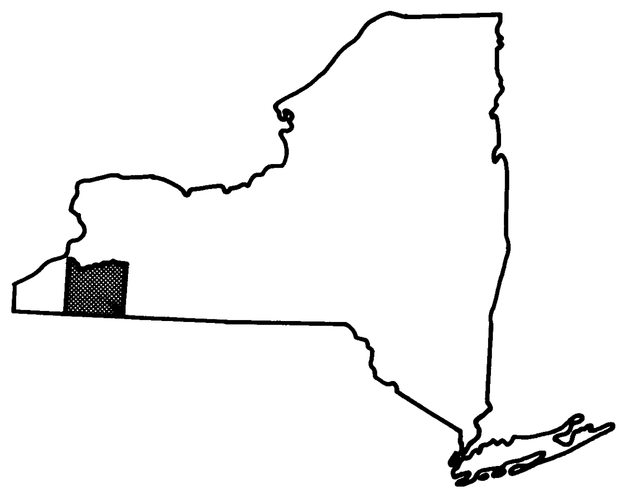
FLOOD INSURANCE STUDY

TOWN OF PORTVILLE, NEW YORK
CATTARAUGUS COUNTY



JANUARY 18, 1983

Federal Emergency Management Agency

COMMUNITY NUMBER - 360093

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FLOOD INSURANCE STUDY
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1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Portville, Cattaraugus County, New York, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This information will allow Portville to continue participation in the regular program of flood insurance by the Federal Emergency Management Agency (FEMA) with the most current data. Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study represent a revision of the original analyses by the New York State Department of Environmental Conservation for the Federal Emergency Management Agency, under Contract No. H-3856. The updated version was prepared by the New York State Department of Environmental Conservation under agreement with the Federal Emergency Management Agency. This study was completed in December 1979.

1.3 Coordination

The purpose of the Flood Insurance Study was explained at a Consultation and Coordination (CCO) meeting on July 29, 1975, with representatives of the Town of Portville, the FEMA, the Cattaraugus County Planning Board, the New York State Department of Environmental Conservation, the United States Department of Agriculture, the Soil Conservation Service (SCS), and the United States Army Corps of Engineers (COE). It was agreed at the meeting that the study would use the hydrologic and hydraulic procedures presently being used in the preparation of a Flood Plain Information report by the COE for the Allegheny River.

A search for basic data was made at all levels of government. The COE and the SCS provided information which served as part of the input for the hydraulic analysis. The U.S. Geologic Survey (USGS) was contacted to obtain contour maps showing drainage boundaries and flow information.

On November 4, 1976, a meeting was held with officials of the town to obtain additional local input. The final CCO meeting was held on September 16, 1980, where the final draft of the Flood Insurance Study was presented and local comments regarding the approximate area were resolved.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Portville. The Village of Portville is not included in this study. The area of study is shown on the Vicinity Map (Figure 1).

Because of the development within the flood plain areas, it was agreed between the FEMA and the Town of Portville that the Allegheny River (5.80 mi.), Haskell Creek (2.75 mi.), Dodge Creek (2.23 mi.) and Oswayo Creek (3.50 mi.) would be studied in detail. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through December 1984.

In addition, Haskell Creek from Haskell Road upstream to the northern town boundary, and a low lying area near the mouth of Lillibridge Creek were studied by approximate methods because of a lack of development in these areas. Approximate methods of analysis were used to study those areas having low development potential and minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FEMA.

2.2 Community Description

The Town of Portville, located in the southeastern corner of Cattaraugus County, is in southwestern New York. It has an area of 31.5 square miles. Portville is bordered on the west by the Town of Olean, on the north by the Town of Hinsdale, on the east by the Towns of Clarksville and Genesee and on the south by the State of Pennsylvania. The community

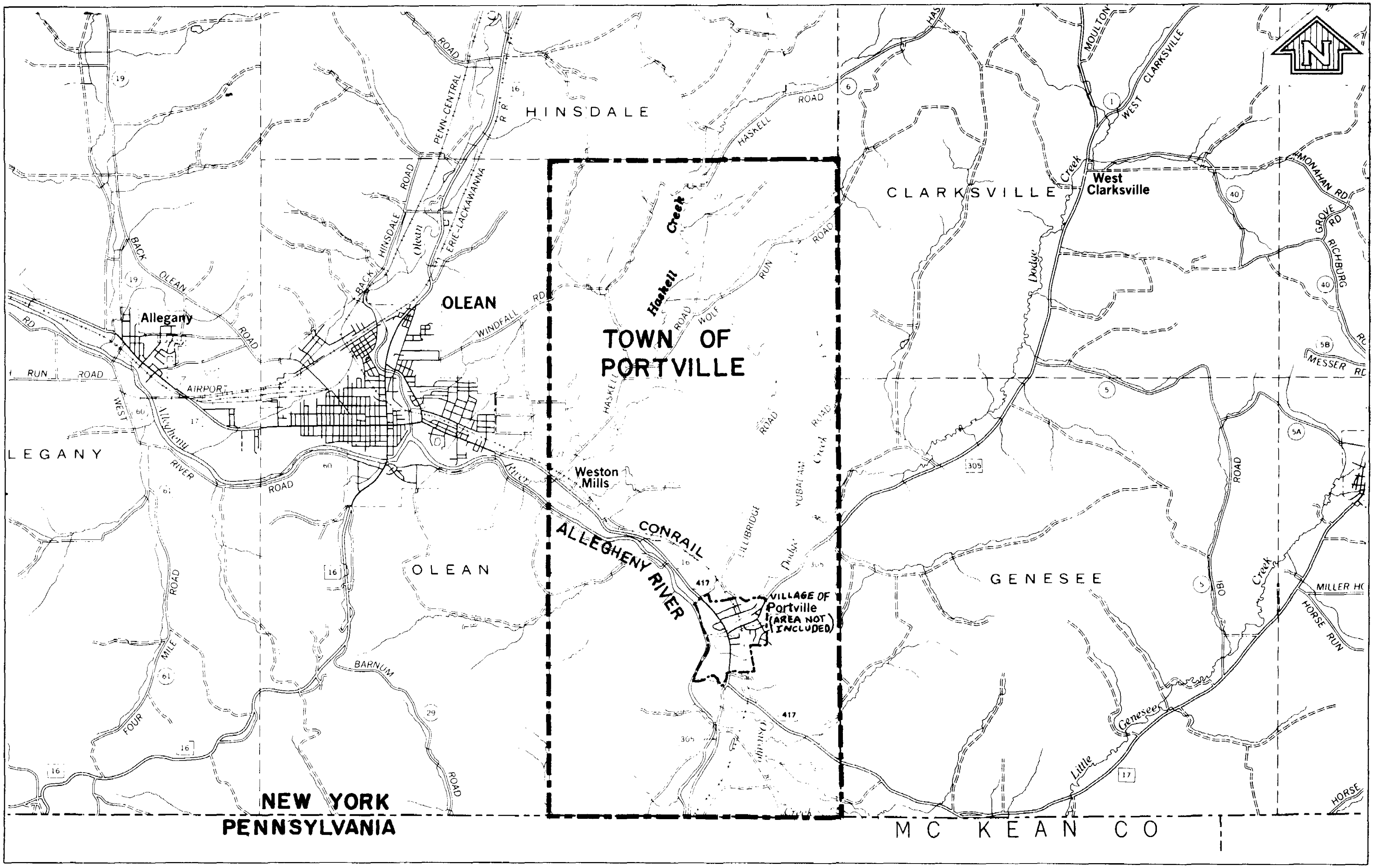


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF PORTVILLE, NY

(CATTARAUGUS CO.)

APPROXIMATE SCALE

2 0 2 4 6 miles

VICINITY MAP

is flat along the stream valley and relatively hilly elsewhere. The soil is comprised of till and other glacial deposits (Reference 1). The elevations range between 1,400 feet in the valley and 2,400 feet in the hills (Reference 2). All elevations in the town are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as the mean sea level datum with the 1929 general adjustment. The average annual temperature is about 45 degrees Fahrenheit (°F). Precipitation is approximately 37.0 inches per year with runoff constituting 21 inches (Reference 3).

The population of the town has steadily increased since 1920. It rose 28 percent from 3,321 to 4,252 people in the years between 1960 to 1970 (Reference 4). This has been due to an increase in the Weston Mills area, caused by the movement of light industry into the area.

Development is mostly confined to the valley areas with much of the flatlands occupied by highways and railroads. There is extensive agriculture within much of the flood plain areas and the surrounding hills are heavily forested. Continuing development, without the protection of adequate land use controls, is likely to take place in or on the edges of flood prone areas due to their ease of development.

The Allegheny River begins in the Commonwealth of Pennsylvania, flows into New York State at the midpoint of the southern boundary of the Town of Portville, thence through the south-central part of the town and eventually back into Pennsylvania to the City of Pittsburgh where it joins with the Monongahela River to form the Ohio River.

Haskell Creek begins in the Town of Clarksville, Allegheny County. It flows in a southwesterly direction into Cattaraugus County and the northern portion of the Town of Portville. The creek leaves the town at about the midpoint of its western boundary and continues for a short distance through the Town of Olean to its confluence with the Allegheny River.

Dodge Creek also begins in the Town of Clarksville, Allegheny County. It flows into Cattaraugus County at about the midpoint of the east boundary of the Town of Portville and thence through the Town and the Village of Portville to its junction with the Allegheny River.

Oswayo Creek begins in the Commonwealth of Pennsylvania. It flows into the Town of Portville at its southeasterly corner and then flows northwesterly through the town to its confluence with the Allegheny River at the southern boundary of the Village of Portville.

2.3 Principal Flood Problems

The most frequent floods in the study area result from winter or spring rainfall, usually augmented by melting snow. There is no gaging station located in the town. The maximum discharge of the Allegheny River at Portville occurred during Tropical Storm Agnes in June 1972. The closest recorded discharge on the Allegheny River during that storm was 59,000 cubic feet per second (CFS) at Olean, New York (Reference 5). The maximum recorded discharge of Dodge Creek at Portville (drainage area 45.7 sq. mi.) was 4,200 cfs occurring on June 23, 1972 (Reference 6).

The photos show the Town of Portville during the June 1972 flood caused by Tropical Storm Agnes (Figures 2 and 3).

2.4 Flood Protection Measures

Parts of the Allegheny River and Oswayo Creek are diked on their eastern sides. The FEMA specifies that all levees must have a minimum of three feet freeboard against 100-year flooding to be considered a safe flood protection structure. The aforementioned levees along the Allegheny River and Oswayo Creek meet the freeboard requirements and can be considered safe flood protection structures. Dodge Creek has embankments on both banks in the Village of Portville. These protection measures were installed by the COE and are maintained by the State of New York.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one-percent chance of annual occurrence) in any 50-year period is about 40 percent (four in ten) and, for any 90-year period, the risk increases to about 60 percent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

Figure 2 - North side of Allegheny River in Weston Mills at the boundary of the Towns of Portville and Olean. Allegheny River in background and Haskell Creek is in foreground of picture (1972 Agnes Flood).

Figure 3 - Just east of the Village of Portville. Oswayo Creek flowing from left to right in center of picture at junction of State Roads 417 and 305 (1972 Agnes Flood).

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

The peak discharge-frequency relationship was primarily based on statistical analyses of stage and discharge records at the National Weather Service/City of Olean recording gage at Olean, New York and the USGS recording gage at Eldred, Pennsylvania.

The Olean gage is located at the Olean Sewage Disposal Plant approximately 1.6 miles downstream of Olean Creek on the north bank of the Allegheny River. The gage has been read daily since it was installed by the City of Olean in November 1942.

The National Weather Service made daily readings from a staff gage installed by the COE on the Union Street bridge over the Allegheny River at Olean from 1909 to 1920 and from 1929 to 1938. The Union Street bridge gage was located approximately 0.5 mile downstream of Olean Creek.

Since there is little difference in drainage area, the record of the Union Street gage was considered consistent with the record at the Olean sewage disposal plant. Peak flows were established between 1938 to 1942 to provide a record for analysis from 1930 to 1974.

Investigation of all other available hydrologic data was made to aid in the determination of historical peak flood discharges at Olean. Using a log-Pearson Type III distribution of the peak flow data as outlined by the Water Resources Council Bulletin No. 17, the values of the 10-, 50-, 100-, and 500-year peak discharges were obtained (Reference 7).

The Olean frequency was then adjusted to the frequency at the USGS gage at Salamanca by a flow relationship between the two gages. The flow relationship was developed by analyzing peak flows during the period 1930-74. This adjustment was done to take advantage of the Salamanca gage's longer period of record, 1904-74. The Salamanca gage is located 239 feet upstream of the Main Street bridge on the south bank approximately 21.4 miles downstream of the Olean gage.

The gaging station at Eldred, Pennsylvania was established by the USGS in 1939, upstream of State Highway 346 bridge. The original gage installed in 1915 and abandoned in 1939 was located approximately 7.5 miles further upstream at the Route 6 bridge at Larabee. Since there is little difference in drainage area, the record at Larabee was considered consistent with the record at Eldred. Since partial records are available at Larabee prior to 1921, a period of 1921-74 was used by analysis. Investigation of all other available hydrologic data was made to aid in the determination of historical peak flood discharges at Eldred. Using a log-Pearson Type III distribution of the peak flow data, the values of the 10-, 50-, 100- and 500-year peak discharges were obtained.

The frequency flows between the Olean and Eldred gages were then hydrologically proportioned.

A synthetic rainfall-runoff relationship method, based on a dimensionless unit hydrograph, was used to develop flood flow-frequency relationships for Dodge, Haskell and Oswayo Creeks. The 24-hour rainfall amounts for frequencies up to 100 years, as obtained from the Rainfall Frequency Atlas of the United States, were plotted on log-normal paper, and the rainfall amount for the 500-year frequency was extrapolated from the resulting graph (Reference 8). The watershed of each stream was divided into subareas to evaluate the hydrologic effects of as many tributaries as would be significant.

The computer program TR-20 developed by the SCS, was used to compute surface runoff (Reference 9). It takes into account conditions affecting runoff such as land use, type of soil, shape and slope of watershed or antecedent moisture condition. It develops a hydrograph and routes the hydrograph through stream channels and reservoirs. The program is designed to combine the routed hydrograph with those from other tributaries and print out the total composite hydrograph peak discharges and times of occurrence at each desired point in the watershed for each storm evaluated. From this data, frequency discharge drainage area curves were plotted for each evaluation point.

A summary of discharges and drainage areas is shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
HASKELL CREEK					
Downstream Corporate Limits	31.7	2,033	3,050	3,654	4,607
Haskell Road	27.2	1,844	2,766	3,313	4,177
DODGE CREEK					
Downstream Corporate Limits	45.5	2,778	4,008	4,600	5,784
Upstream Corporate Limits	35.9	2,400	3,468	3,975	4,998

TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
OSWAYO CREEK					
Mouth at Allegheny River	246.96	8,644	13,400	16,102	20,451
ALLEGHENY RIVER					
Downstream Corporate Limits	921	20,900	32,500	39,900	59,500
14,177 feet above downstream corporate limits	865	20,900	32,500	39,900	59,500
18,665 feet above downstream corporate limits	860	19,750	30,800	37,750	56,350
Upstream Corporate Limits	590	16,800	28,300	35,500	52,800

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Cross section data for the Allegheny River and Oswayo Creek were obtained from aerial photographs and field surveys. Elevations for the Allegheny River came from a continuation of profiles which began at Salamanca, 29.7 miles downstream. All profiles checked into the Eldred gage within +/- 0.2 foot.

Roughness coefficients (Manning's "n") for the Allegheny River were developed by field inspection and verification of the June 1972 and September 1967 flood profiles. The roughness value for the main channel for this reach is 0.04; roughness values for the flood plain range from 0.10 to 0.15. Roughness coefficients for Oswayo Creek were based on field inspections. Roughness values for the main channel varied from 0.035 to 0.040; roughness values for the flood plain varied from 0.065 to 0.080.

Cross sections were located at close intervals above and below bridges, at control sections along the stream length, and at significant changes in ground relief and land use or land cover.

Water-surface profiles of the selected recurrence intervals for the Allegheny River and Oswayo Creek were developed using the HEC-2 Step-Backwater Computer Program (Reference 10). Locations of selected cross sections used in the hydraulic analyses are shown on the Flood

Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3). The 10-, 50-, 100-, and 500-year profiles are considered applicable as long as bridges remain unobstructed and channels retain their present capacities without alteration from scour, deposition, or significant vegetative growth. The 100-year and 500-year flood elevations of Oswayo Creek were found to be completely controlled by the Allegheny River.

The water-surface elevation at the initial cross section for the HEC-2 program can be specified as at the point of confluence of a tributary, or can be calculated using a slope/area method which uses the slope of the energy grade line and the discharge to determine starting water surface elevations. The slope/area method was the technique used to determine the starting elevation for Oswayo Creek.

Distance references used in the computer backwater analysis of the Allegheny River were based on the COE mile marker system. As a result there are discrepancies in lengths appearing in the computer output and the correct distances that appear on the mapping and the profiles in this report. This level of accuracy is consistent with the general method of calculations used in the backwater determinations and the low energy differential occurring along the reaches under analysis.

A 100-year floodway encroachment analysis of the Allegheny River was made to determine the floodway boundary. A Type 10.4 Study (equal conveyance) was made and then verified by a Type 9.1 Study. For the most part, the encroachment profile is 0.7 to 0.9 foot higher than the natural profile.

Reach lengths for the channel were measured along the centerline of the channel between sections, and overbank reach lengths measured along the approximate centerline of the effective out-of-channel flow area. An exception to the foregoing was made for Oswayo Creek at two oxbow meanders upstream of East Carrol Road. For these reaches, channel lengths were measured along a shortened length representing the direction of the main mass of flow between cross sections.

Flood profiles on Dodge and Haskell Creeks were calculated using the SCS WSP-2 Water Surface Profiles computer program (Reference 11). Cross section data was obtained from aerial photography and field surveys. For starting profile computations, the tailwater elevations on the Allegheny River as supplied by the COE were used.

This program uses the standard step method, with some modifications, to compute profiles between valley sections. All profiles are computed in the upstream direction; therefore only subcritical flow, a condition normally characteristic of natural streams, can be analyzed. For any super-critical flows encountered, the program will assume critical flow and resume computations. At any one road restriction, WSP-2 can compute head losses through one bridge opening or up to five culvert openings. Each of the five culvert openings can have an unlimited number of identical culverts.

For Dodge and Haskell Creeks, the roughness coefficients (Manning's "n") were determined by field inspection and based on the National Engineering Handbook (Reference 12).

To arrive at a realistic value, due weight was given to the natural materials the channel was composed of, surface irregularity, variations in shape and size of cross sections, characteristics of obstructions such as debris deposits, stumps, exposed roots, boulders, fallen and lodged logs, type of vegetation and degree of meandering. The Manning's "n" values were 0.05 to 0.065 in the channel and 0.05 to 0.095 in the overbanks for Dodge Creek, and 0.05 to 0.070 in the channel and 0.055 to 0.12 in the overbanks for Haskell Creek.

The Frequency-Discharge, Drainage Area Curves at each cross section were used to develop the corresponding stage-frequency relationships.

Flood profiles for the Allegheny River and Dodge, Haskell and Oswayo Creeks were drawn showing computed water-surface elevations to an accuracy of +/- 0.5 foot for floods of the selected recurrent intervals (Exhibit 1). All elevations are referenced from NGVD; elevation reference marks used in the study are shown on the maps.

For the stream reach of Haskell Creek studied by approximate methods, USGS Flood Height-Drainage Area Curves for the 100-year flood were utilized (Reference 6). Drainage areas were developed at selected locations from USGS 7.5 Minute series topographic maps (Reference 2). 100-year flood heights were then extracted from the curves and, using USGS 7.5 Minute series topographic maps for differential elevation reference, approximate 100-year inundation limits were plotted on N.Y.S. DOT 7.5 Minute series planimetric maps. Estimates of discharges and slopes and a field view of each stream were also employed to verify the delineation.

Approximate 100-year inundation limits for the small portion of Lillibridge Creek near its mouth were determined on the basis of the design ponding elevation when gravity flow through the flood control levee is impeded by high stages of the Allegheny River (Reference 13).

It should be noted that no flood height drainage area relationship has been developed by USGS for the Allegheny River Basin. However, the upper Genesee River Basin, immediately to the east of the Allegheny River Basin, has definite hydrologic and hydraulic similarities to the area of study and was therefore used in the analysis.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FEMA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps developed for this study from aerial photography at a scale of 1:400 feet with a contour interval of 5 feet (Reference 14). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale and lack of detailed topographic data, such areas are not shown.

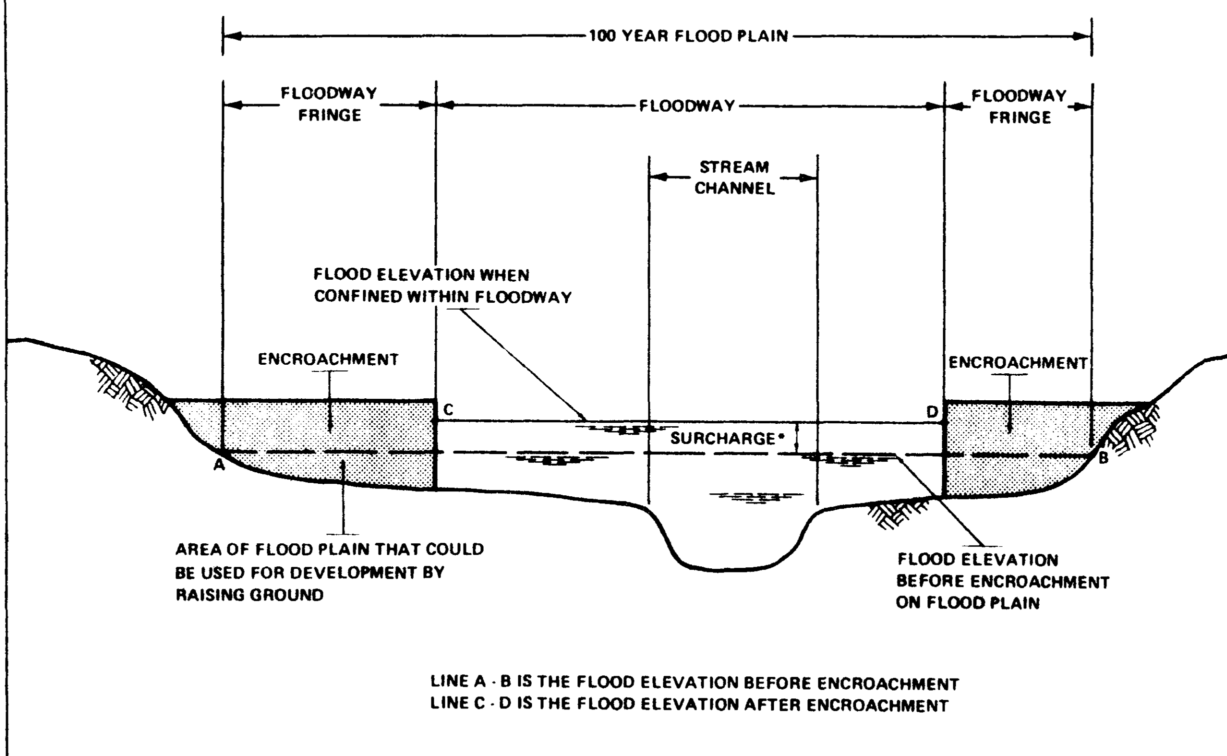
4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood can be carried without substantial increases in flood heights. Minimum standards of the FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plains. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown. A portion of the floodway computed for the Allegheny River lies outside the corporate limits.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 4.



FLOODWAY SCHEMATIC Figure 4

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Allegheny River								
A	4,884[1]	595	8,696	4.59	1,429.6	1,429.6	1,430.5	0.9
B	14,177[1]	582/460[3]	8,398	5.62	1,433.9	1,433.9	1,433.9	0.0
C	18,665[1]	949/269[3]	16,958	2.20	1,436.4	1,436.4	1,436.4	0.0
D	27 852[1]	2,247	30,309	1.20	1,438.4	1,438.4	1,439.3	0.9
Haskell Creek								
A	6,106[2]	184	2,117	1.67	1,428.3	1,428.3	1,429.3	1.0
B	8,976[2]	546	3,300	1.05	1,429.4	1,429.4	1,430.4	1.0
C	11,206[2]	500	2,913	1.19	1,429.9	1,429.9	1,430.9	1.0
D	15,034[2]	1,007	3,318	1.01	1,430.7	1,430.7	1,431.7	1.0
E	16,269[2]	369	1,508	2.20	1,431.8	1,431.8	1,432.8	1.0
F	17,634[2]	148	742	4.47	1,436.3	1,436.3	1,437.3	1.0
G	18,559[2]	82	605	5.48	1,439.2	1,439.2	1,440.2	1.0
Dodge Creek								
A	5,733[2]	171	876	5.24	1,441.3	1,441.3	1,442.3	1.0
B	7,433[2]	166	778	5.90	1,450.5	1,450.5	1,451.5	1.0
C	9,158[2]	156	842	5.43	1,455.9	1,455.9	1,456.9	1.0
D	10,113[2]	145	991	4.61	1,458.1	1,458.1	1,459.1	1.0
E	12,633[2]	461	1,661	2.74	1,462.8	1,462.8	1,463.8	1.0

[1]Feet above corporate limits.

[2]Feet above confluence with the Allegheny River.

[3]Width/width within corporate limits.

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF PORTVILLE, NY

(CATTARAUGUS CO.)

FLOODWAY DATA

ALLEGHENY RIVER, HASKELL CREEK, AND DODGE CREEK

TABLE 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Dodge Creek (continued)								
F	14,579	161	1,182	3.49	1,468.9	1,468.9	1,469.9	1.0
G	15,054	358	2,140	1.86	1,469.2	1,469.2	1,470.2	1.0
H	16,549	118	840	4.73	1,470.9	1,470.9	1,471.9	1.0
Oswayo Creek								
A	5,110	1,630	9,556	1.7	1,437.0	1,431.5[2]	1,431.8	0.3
B	7,230	2,160	15,324	1.1	1,437.0	1,432.2[2]	1,432.5	0.3
C	9,130	1,780	12,903	1.2	1,437.0	1,432.4[2]	1,432.7	0.3
D	11,450	1,680	9,640	1.7	1,437.0	1,432.6[2]	1,433.1	0.5
E	11,710	1,710	9,073	1.8	1,437.0	1,432.7[2]	1,433.4	0.7
F	12,770	1,690	5,255	3.1	1,437.0	1,433.4[2]	1,433.9	0.5
G	15,270	1,820	12,553	1.3	1,437.0	1,434.8[2]	1,435.7	0.9

[1]Feet above confluence with the Allegheny River.
[2]Elevations computed without consideration of backwater effects from the Allegheny River.

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF PORTVILLE, NY

(CATTARAUGUS CO.)

FLOODWAY DATA

DODGE CREEK AND OSWAYO CREEK

TABLE 2

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "With Floodway" elevations presented in Table 2 for certain downstream cross sections of Oswayo Creek are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Town of Portville.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

Four reaches meeting the above criteria were required to establish flood and insurance zones for the Town of Portville. These included two on Haskell Creek and one each on the Allegheny River and Dodge Creek. The locations of the reaches are shown on the Flood Profiles (Exhibit 1).

5.2 Flood Hazard Factors

The FHF is the FEMA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the Town of Portville was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zone A3, A8, A11:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Town of Portville is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FEMA.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Allegheny River							
Reach 1	02,03	-5.7	-2.0	+3.9	055	All	Varies
Haskell Creek							
Reach 1	02	-4.0	-1.4	+3.5	040	A8	Varies
Reach 2	02	-1.6	-0.7	+1.7	015	A3	Varies
Dodge Creek							
Reach 1	02	-1.4	-0.5	+0.6	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

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FLOOD INSURANCE ZONE DATA

ALLEGHENY RIVER, HASKELL CREEK, AND DODGE CREEK

TABLE 3

6.0 OTHER STUDIES

There is no known Flood Plain Information Report for the reaches of the Allegheny River, Haskell Creek, Dodge Creek or Oswayo Creek through the Town of Portville. However, there is a Flood Plain Information Report for Olean, New York (Reference 15). There are Flood Insurance Studies for the Towns of Olean and Hisndale which border the Town of Portville (References 16 and 17). There is also a Flood Insurance Study for the Village of Portville (Reference 18). No data disagreements occur between the studied.

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Insurance and Mitigation Division of the Federal Emergency Management Agency, Regional Director, Region II Office, 26 Federal Plaza, Room 19-100, New York, New York 10278.

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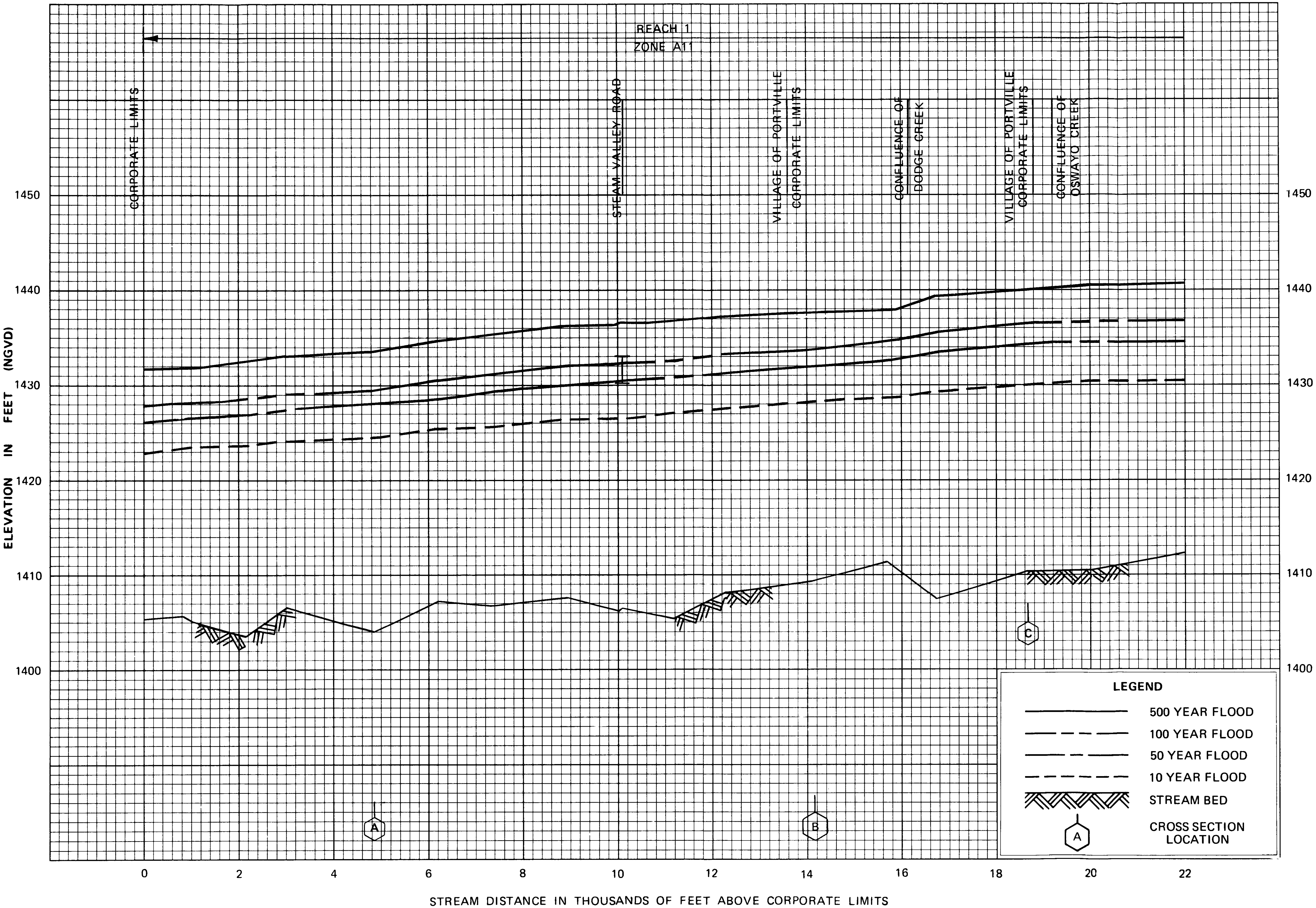

FLOOD PROFILES

ALLEGHENY RIVER

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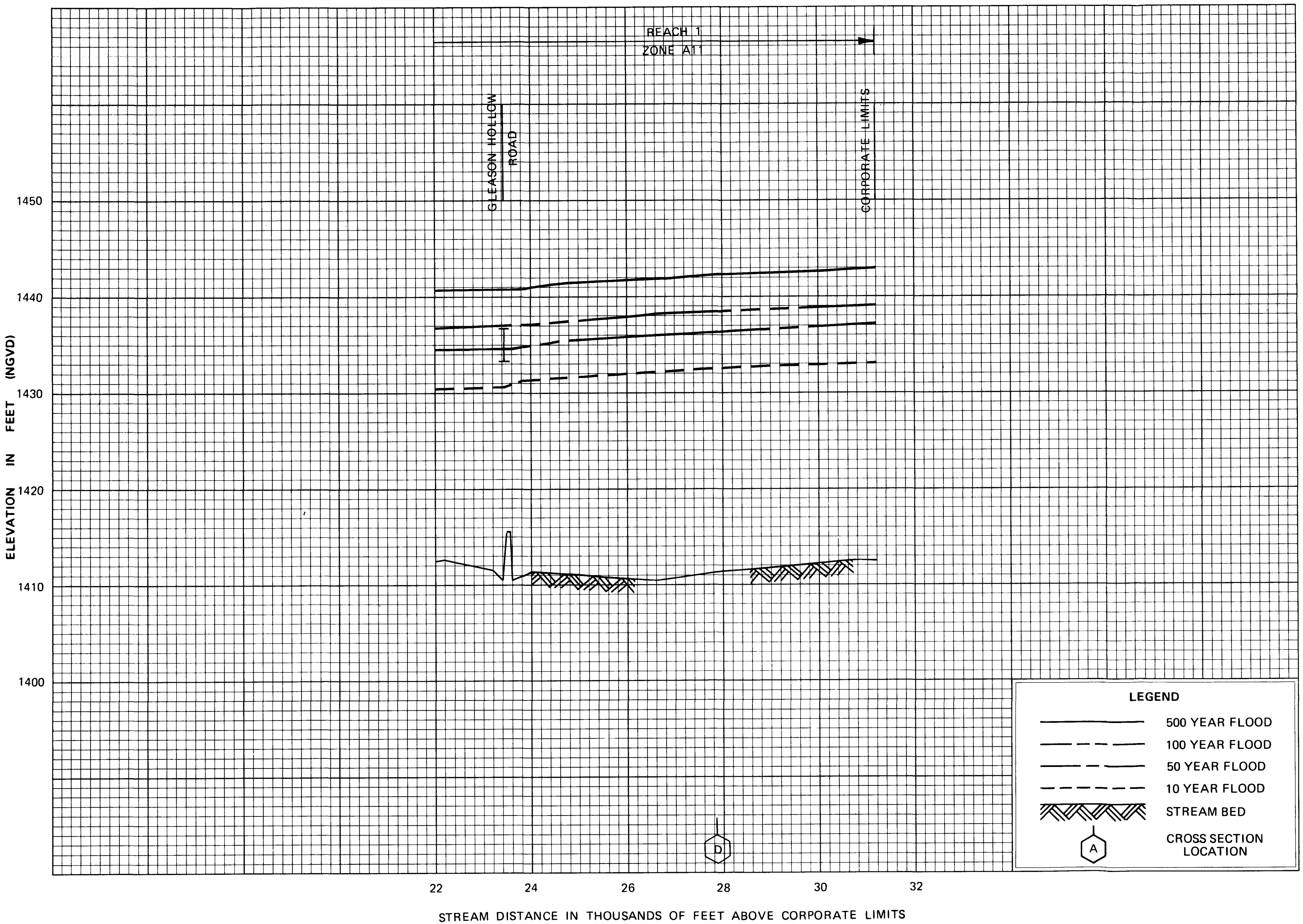
01P



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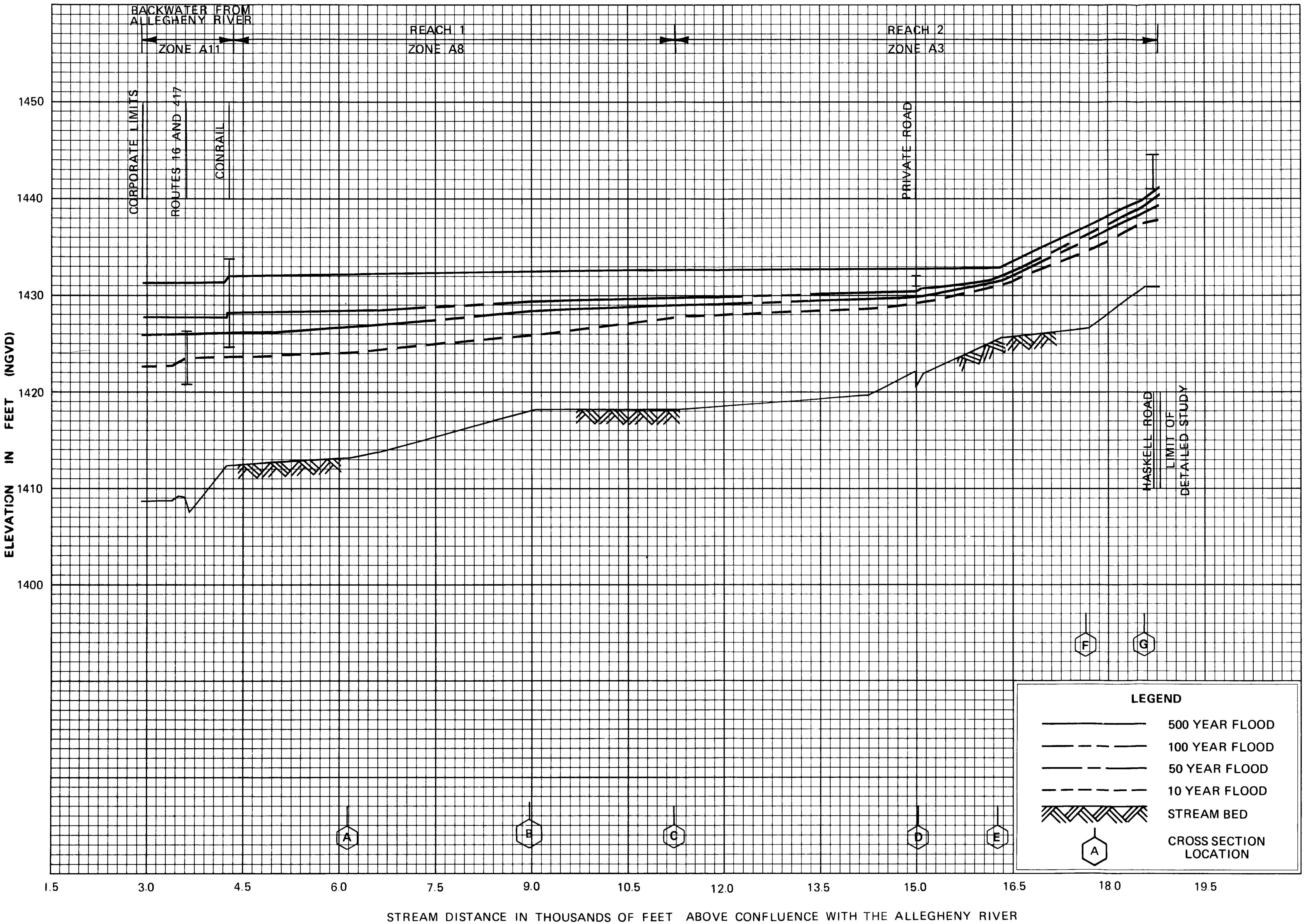
TOWN OF PORTVILLE, NY
(CATTARAUGUS CO.)

FLOOD PROFILES

ALLEGHENY RIVER

02P



FLOOD PROFILES

HASKELL CREEK

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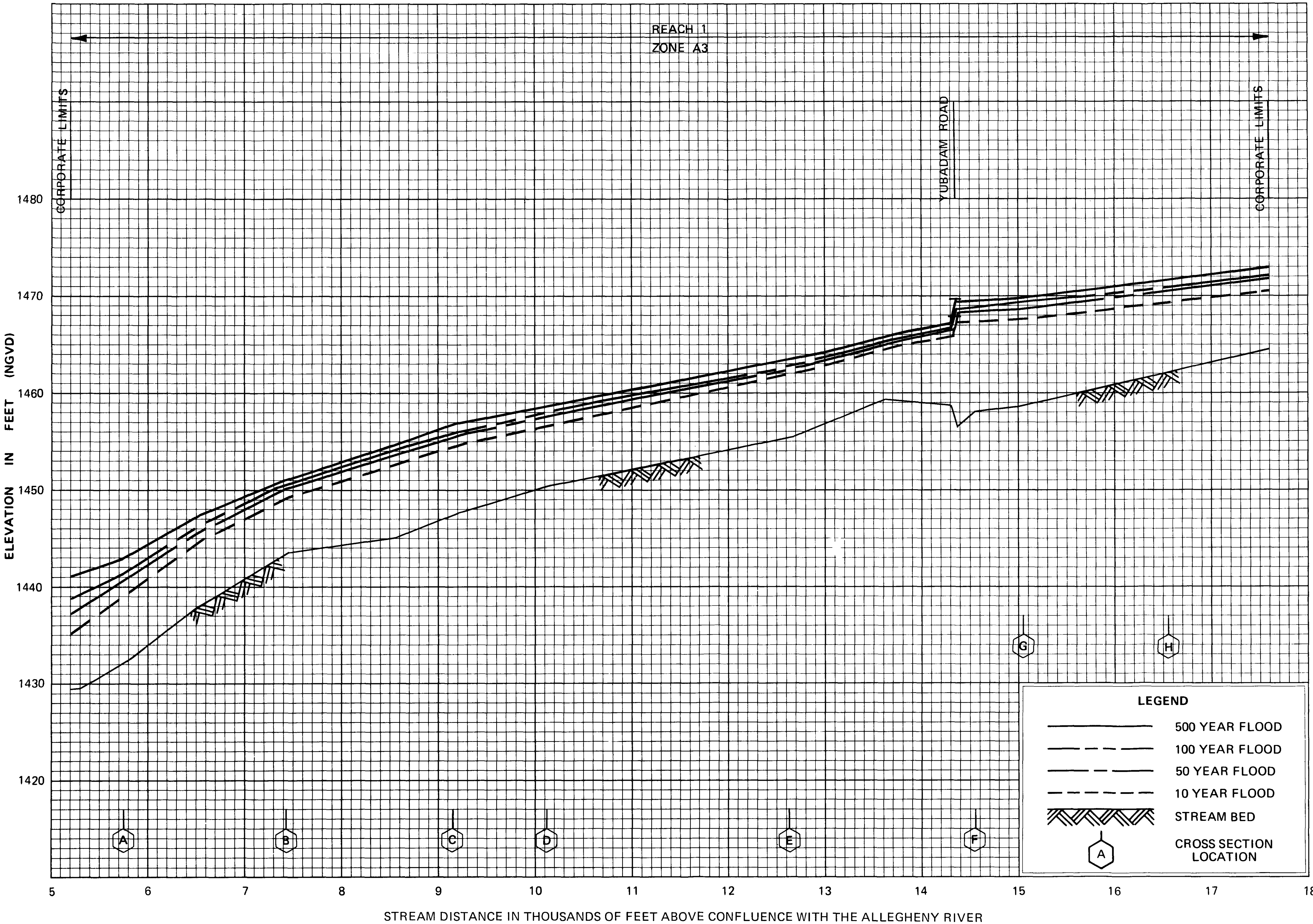

FLOOD PROFILES

DODGE CREEK

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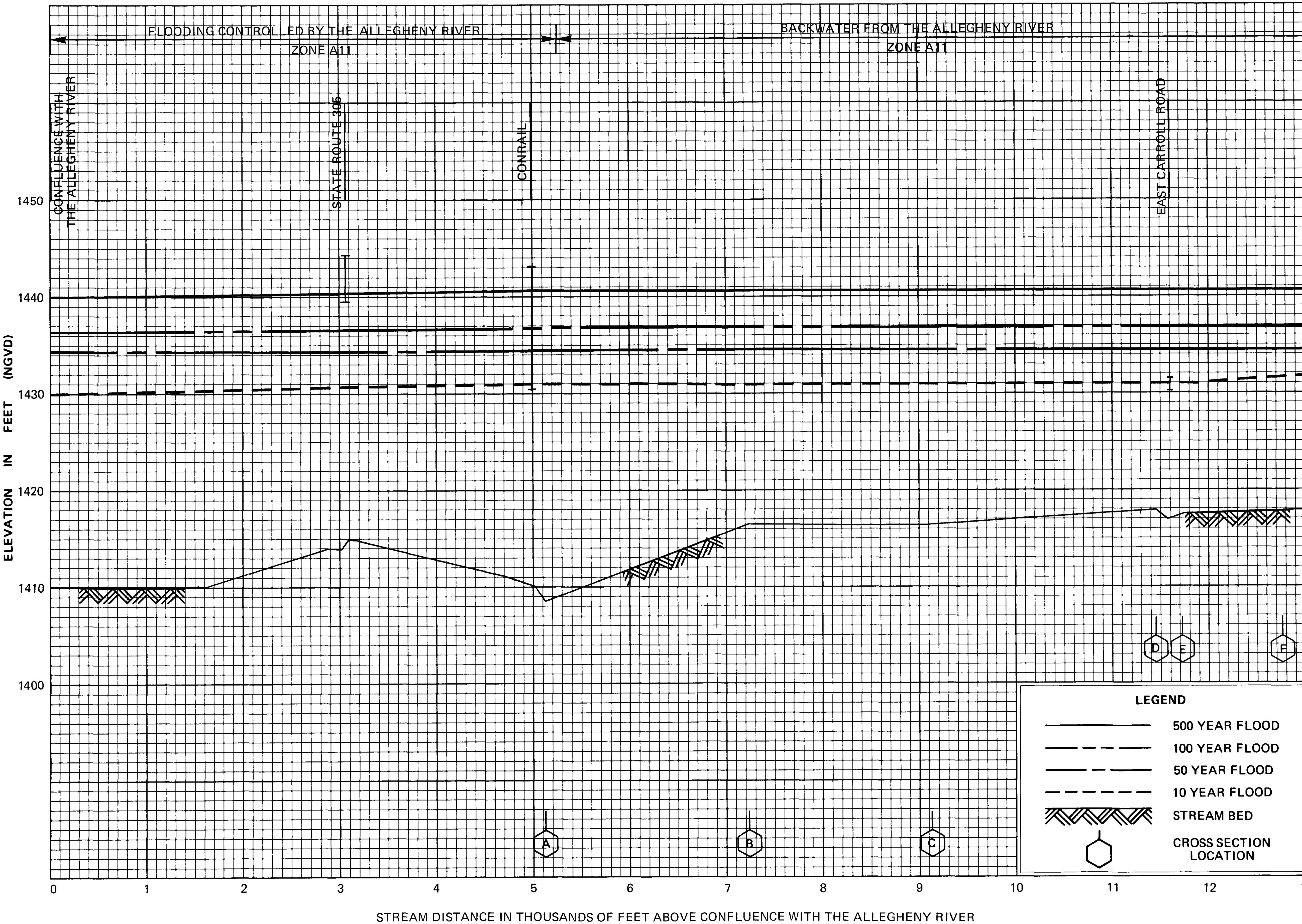

FLOOD PROFILES

OSWAYO CREEK

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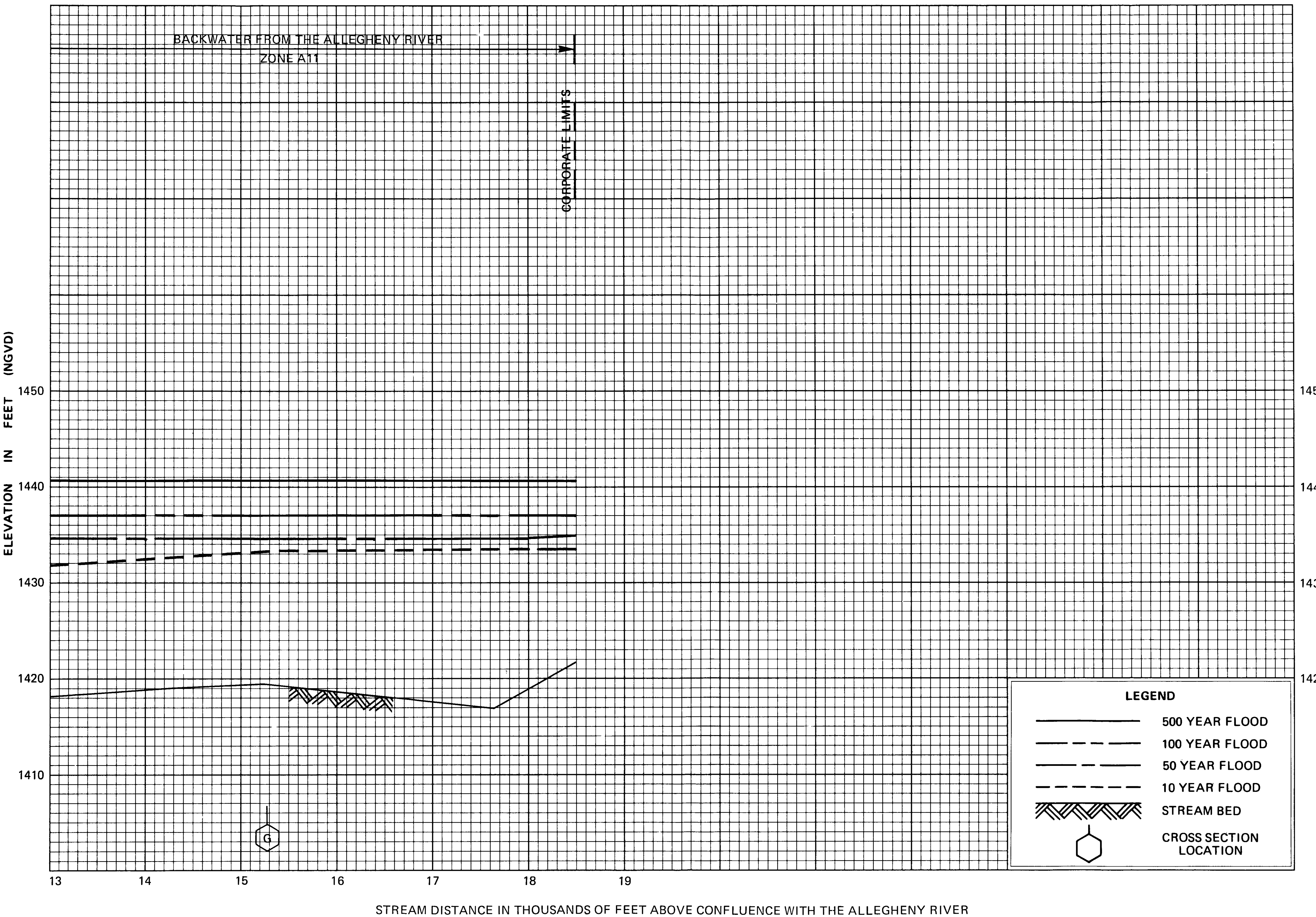

FLOOD PROFILES

OSWAYO CREEK

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06P